

9.1 Sampling

Opportunity Sampling

Opportunity (or convenience) sampling is where the sample is chosen from a selection of the population that is most **convenient** for the sampler.

To choose an opportunity sample:

- Choose members of the population that are the **easiest** to sample – e.g. ask the first people you meet or sample whatever products you can find.

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Opportunity Sampling

Opportunity (or convenience) sampling is where the sample is chosen from a selection of the population that is most **convenient** for the sampler.

Advantage

- Data can be gathered very **quickly** and **easily**

Disadvantage

It **isn't random** and can be **very biased** – there's no attempt to make the sample representative

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Opportunity Sampling Example

Mel thinks that most people watch her favourite television programme. She asks 20 friends whether they watch the television programme.

a) Name the sampling method Mel used

Mel asked her friends because they're easily available to sample □ opportunity (or convenience) sampling

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Opportunity Sampling Example

Mel thinks that most people watch her favourite television programme. She asks 20 friends whether they watch the television programme.

- b) Give two reasons why Mel's sample may be biased
1. Mel's friends could be of a similar age or the same gender, which is not representative of the whole population
 2. Because this is Mel's favourite television

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Cluster Sampling

Cluster sampling is another method that's useful when the population can be divided into **distinct groups**. The clusters should be groups that you expect to give **similar** results to each other.

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Cluster Sampling

To choose a cluster sample:

- Divide the population into **clusters** covering the **whole population**, where **no member** of the population belongs to **multiple clusters**.
- **Randomly** select clusters to use in the sample, based on the required sample size.
- Either use **all** the members of the selected cluster (a **one-stage** cluster sample), or **randomly sample** within each cluster to form the sample (a **two-stage** cluster

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Cluster Sampling

Advantages

- It can be more **practical** (e.g. quicker or cheaper) in certain situations.
 - You can incorporate **other** sampling methods, making it quite **adaptable**.
- You can use **any** of the **other sampling techniques** for **either stage** of the sample,

Disadvantages

- Because you only sample certain clusters, the results could be less representative.
- It's not always possible to separate a population into clusters in a natural way.

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Cluster Sampling Example

A researcher wants to conduct a taste test of a new energy drink on university students in the UK.

a) Explain why a cluster sample might be suitable in this situation

Taking universities in the UK as the clusters, all university students are included, and you can assume that no student belongs to multiple universities. You would also expect different universities to give similar results.

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Cluster Sampling Example

A researcher wants to conduct a taste test of a new energy drink on university students in the UK.

a) Explain why a cluster sample might be suitable in this situation

Universities in the UK form clusters that are disjoint and cover the whole population, and that would be expected to give similar results to each other. Using a cluster sample would also be convenient in this situation, as the

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Cluster Sampling Example

A researcher wants to conduct a taste test of a new energy drink on university students in the UK.

b) Explain whether a one-stage or a two-stage cluster sample would be more appropriate.

Conducting a taste test on every student at a university would be expensive and difficult to organise. It would be better to take a sample of the students and conduct the test on them, so a **two-stage** cluster sample would be more

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Self-selection Sampling

Self-selection (or volunteer) sampling is where people **choose** to be part of the sample – e.g. they choose to complete a questionnaire or volunteer to take part in a study.

To create a self-selection sample:

- **Advertise** or appeal to the whole population for participation in the sample (possibly offering payment).
- Either use everyone who responds as the sample, or take a sample of them to best represent the population.

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Self-selection Sampling

Advantages

- It requires **little time** or **effort** in finding sample members, as they contact you.
- People who have volunteered are less likely not to respond.
- It could be the only way to get people to take part in a study, or to

Disadvantage

- There can easily be **trends** within the respondents, such as people having **strong opinions**, which would lead to bias.

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Self-selection Sampling Example

A website puts an advert on their home page, asking visitors to complete a short survey about the site for a payment of £20. Give three ways that this sampling method could cause bias in their results.

1. People who are willing to complete the survey might have stronger opinions than other visitors, which would introduce bias into the results
2. Certain people might not see the advert if the website does not display properly for them, or if

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Self-selection Sampling Example Exercise 1.6

A website puts an advert on their home page, asking visitors to complete a short survey about the site for a payment of £20. Give three ways that this sampling method could cause bias in their results.

3. Since the website is offering money for responses, people might be more likely to try to fill out the survey multiple times or not take the questions seriously, which would make the responses less representative of the views of all of their visitors.

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To choose a cluster sample:

- Divide the population into _____ covering the _____, where _____ of the population belongs to _____.
- _____ select clusters to use in the sample, based on the required sample size.
- Either use _____ the members of the selected cluster (a _____ cluster sample), or _____ within each cluster to form the sample (a _____ cluster sample).

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Cluster Sampling

Advantages

- It can be more _____ (e.g. quicker or cheaper) in certain situations.
- You can incorporate _____ sampling methods, making it quite _____ of the _____ for _____ of the sample,

Disadvantages

- Because you only sample certain clusters, the results could be less _____.
- It's not always possible to _____ a population into _____ clusters in a natural way, depending on the _____

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- b) Explain whether a one-stage or a two-stage cluster sample would be more appropriate.

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